```
SQL> cl scr

SQL> SELECT Empno, Ename, MGR, Job
  2  FROM Emp
  3  START WITH Ename = 'KING'
  4  CONNET BY PRIOR Empno = MGR;
CONNET BY PRIOR Empno = MGR
*
ERROR at line 4:
ORA-00933: SQL command not properly ended


SQL> ED
Wrote file afiedt.buf

  1  SELECT Empno, Ename, MGR, Job
  2  FROM Emp
  3  START WITH Ename = 'KING'
  4* CONNECT BY PRIOR Empno = MGR
SQL> /

    EMPNO ENAME                     MGR JOB
---------- ---------- ---------- ---------
      7839 KING                       PRESIDENT
      7566 JONES            7839 MANAGER
      7788 SCOTT            7566 ANALYST
      7876 ADAMS            7788 CLERK
      7902 FORD             7566 ANALYST
      7369 SMITH            7902 CLERK
      7698 BLAKE            7839 MANAGER
      7499 ALLEN            7698 SALESMAN
      7521 WARD             7698 SALESMAN
      7654 MARTIN           7698 SALESMAN
      7844 TURNER           7698 SALESMAN
      7900 JAMES            7698 CLERK
      7782 CLARK            7839 MANAGER
      7934 MILLER           7782 CLERK

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT Empno, Ename, MGR, Job
  2  FROM Emp
  3  START WITH Job = 'PRESIDENT'
  4* CONNECT BY PRIOR Empno = MGR
SQL> /
```

```
    EMPNO ENAME           MGR JOB
---------- ---------- ---------- ---------
     7839 KING                   PRESIDENT
     7566 JONES          7839 MANAGER
     7788 SCOTT          7566 ANALYST
     7876 ADAMS          7788 CLERK
     7902 FORD           7566 ANALYST
     7369 SMITH          7902 CLERK
     7698 BLAKE          7839 MANAGER
     7499 ALLEN          7698 SALESMAN
     7521 WARD           7698 SALESMAN
     7654 MARTIN         7698 SALESMAN
     7844 TURNER         7698 SALESMAN
     7900 JAMES          7698 CLERK
     7782 CLARK          7839 MANAGER
     7934 MILLER         7782 CLERK

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1   SELECT Empno, Ename, MGR, Job
  2   FROM Emp
  3   START WITH Job = 'PRESIDENT'
  4*  CONNECT BY Empno = PRIOR MGR
SQL> /

    EMPNO ENAME           MGR JOB
---------- ---------- ---------- ---------
     7839 KING                   PRESIDENT

SQL> ED
Wrote file afiedt.buf

  1   SELECT Empno, Ename, MGR, Job
  2   FROM Emp
  3   START WITH Job = 'ANALYST'
  4*  CONNECT BY PRIOR Empno = MGR
SQL> /

    EMPNO ENAME           MGR JOB
---------- ---------- ---------- ---------
     7788 SCOTT          7566 ANALYST
     7876 ADAMS          7788 CLERK
     7902 FORD           7566 ANALYST
     7369 SMITH          7902 CLERK
```

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```
SQL> ED
Wrote file afiedt.buf

  1   SELECT Empno, Ename, MGR, Job
  2   FROM Emp
  3   START WITH Ename = 'JONES'
  4*  CONNECT BY PRIOR Empno = MGR
SQL> /

     EMPNO ENAME            MGR JOB
---------- ---------- ---------- ---------
      7566 JONES           7839 MANAGER
      7788 SCOTT           7566 ANALYST
      7876 ADAMS           7788 CLERK
      7902 FORD            7566 ANALYST
      7369 SMITH           7902 CLERK

SQL> ED
Wrote file afiedt.buf

  1   SELECT Empno, Ename, MGR, Job
  2   FROM Emp
  3   START WITH Ename = 'JONES'
  4*  CONNECT BY Empno = PRIOR MGR
SQL> /

     EMPNO ENAME            MGR JOB
---------- ---------- ---------- ---------
      7566 JONES           7839 MANAGER
      7839 KING                 PRESIDENT

SQL> ED
Wrote file afiedt.buf

  1   SELECT Empno, Ename, MGR, Job
  2   FROM Emp
  3   START WITH Job = 'ANALYST'
  4*  CONNECT BY Empno = PRIOR MGR
SQL> /

     EMPNO ENAME            MGR JOB
---------- ---------- ---------- ---------
      7788 SCOTT           7566 ANALYST
      7566 JONES           7839 MANAGER
      7839 KING                 PRESIDENT
      7902 FORD            7566 ANALYST
      7566 JONES           7839 MANAGER
```

```
        7839 KING                    PRESIDENT

6 rows selected.

SQL> cl scr

SQL> SELECT
  2  Ename Name,
  3  CONNECT_BY_ROOT(Ename) Boss
  4  FROM Emp
  5  START WITH Empno = 7839
  6  CONNECT BY PRIOR Empno = MGR;

NAME        BOSS
---------- ----------

KING        KING
JONES       KING
SCOTT       KING
ADAMS       KING
FORD        KING
SMITH       KING
BLAKE       KING
ALLEN       KING
WARD        KING
MARTIN      KING
TURNER      KING
JAMES       KING
CLARK       KING
MILLER      KING

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  Ename Name,
  3  CONNECT_BY_ROOT(Ename) Boss
  4  FROM Emp
  5  START WITH MGR = 7839
  6* CONNECT BY PRIOR Empno = MGR
SQL> /

NAME        BOSS
---------- ----------

JONES       JONES
SCOTT       JONES
ADAMS       JONES
```

```
FORD        JONES
SMITH       JONES
BLAKE       BLAKE
ALLEN       BLAKE
WARD        BLAKE
MARTIN      BLAKE
TURNER      BLAKE
JAMES       BLAKE
CLARK       CLARK
MILLER      CLARK

13 rows selected.

SQL> ED
Wrote file afiedt.buf

    1   SELECT
    2   Ename Name,
    3   CONNECT_BY_ROOT(Ename) Boss
    4   FROM Emp
    5   START WITH Job = 'ANALYST'
    6*  CONNECT BY PRIOR Empno = MGR
SQL> /

NAME        BOSS
----------  ----------
SCOTT       SCOTT
ADAMS       SCOTT
FORD        FORD
SMITH       FORD

SQL> ED
Wrote file afiedt.buf

    1   SELECT
    2   Ename Name,
    3   CONNECT_BY_ROOT(Ename) Boss
    4   FROM Emp
    5   START WITH Job = 'ANALYST'
    6*  CONNECT BY Empno = PRIOR MGR
SQL> /

NAME        BOSS
----------  ----------
SCOTT       SCOTT
JONES       SCOTT
KING        SCOTT
FORD        FORD
```

```
JONES      FORD
KING       FORD

6 rows selected.

SQL> cl scr

SQL> SELECT ENAME Name,
  2  CONNECT_BY_ROOT Ename Boss,
  3  CONNECT_BY_ROOT Job BossJob
  4  FROM EMP
  5  START WITH Job = 'ANALYST'
  6  CONNECT BY PRIOR EMPNO = MGR;

NAME       BOSS       BOSSJOB
---------- ---------- ---------
SCOTT      SCOTT      ANALYST
ADAMS      SCOTT      ANALYST
FORD       FORD       ANALYST
SMITH      FORD       ANALYST

SQL> cl scr

SQL> SELECT ENAME Name, HireDate,
  2  CONNECT_BY_ROOT Ename Boss,
  3  CONNECT_BY_ROOT HireDate BossHire,
  4  ROUND(CONNECT_BY_ROOT HireDate - HireDate) Days
  5  FROM EMP
  6  WHERE SIGN(CONNECT_BY_ROOT HireDate - HireDate) = 1
  7  START WITH Job = 'PRESIDENT'
  8  CONNECT BY  PRIOR EMPNO =  MGR;
SELECT ENAME Name, HireDate,
*
ERROR at line 1:
ORA-00932: inconsistent datatypes: expected - got DATE


SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  Ename Name,
  3  HireDate,
  4  Boss,
  5  BossHire,
  6  BossHire - HireDate Days
  7  FROM
  8   (
```

```
  9    SELECT ENAME Name, HireDate,
 10    CONNECT_BY_ROOT Ename Boss,
 11    CONNECT_BY_ROOT HireDate BossHire
 12    FROM EMP
 13    START WITH Job = 'PRESIDENT'
 14    CONNECT BY  PRIOR EMPNO =  MGR
 15    )
 16* WHERE SIGN(BossHire - HireDate) = 1
SQL> /
Ename Name,
*
ERROR at line 2:
ORA-00904: "ENAME": invalid identifier


SQL> ED
Wrote file afiedt.buf

  1    SELECT
  2    Name,
  3    HireDate,
  4    Boss,
  5    BossHire,
  6    BossHire - HireDate Days
  7    FROM
  8     (
  9     SELECT Ename Name, HireDate,
 10    CONNECT_BY_ROOT Ename Boss,
 11    CONNECT_BY_ROOT HireDate BossHire
 12    FROM EMP
 13    START WITH Job = 'PRESIDENT'
 14    CONNECT BY  PRIOR EMPNO =  MGR
 15    )
 16* WHERE SIGN(BossHire - HireDate) = 1
SQL> /

NAME       HIREDATE   BOSS       BOSSHIRE        DAYS
---------- ---------- ---------- ---------- ----------
JONES      02-APR-81  KING       17-NOV-81        229
SMITH      17-DEC-80  KING       17-NOV-81        335
BLAKE      01-MAY-81  KING       17-NOV-81        200
ALLEN      20-FEB-81  KING       17-NOV-81        270
WARD       22-FEB-81  KING       17-NOV-81        268
MARTIN     28-SEP-81  KING       17-NOV-81         50
TURNER     08-SEP-81  KING       17-NOV-81         70
CLARK      09-JUN-81  KING       17-NOV-81        161

8 rows selected.
```

```
SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  Name,
  3  HireDate,
  4  Boss,
  5  BossHire,
  6  BossHire – HireDate Days
  7  FROM
  8   (
  9   SELECT Ename Name, HireDate,
 10   CONNECT_BY_ROOT Ename Boss,
 11   CONNECT_BY_ROOT HireDate BossHire
 12   FROM EMP
 13   START WITH Job = 'PRESIDENT'
 14   CONNECT BY  PRIOR EMPNO =  MGR
 15   )
 16* WHERE SIGN(BossHire – HireDate) = –1
SQL> /

NAME       HIREDATE  BOSS       BOSSHIRE       DAYS
---------- --------- ---------- --------- ----------
SCOTT      09-DEC-82 KING       17-NOV-81       -387
ADAMS      12-JAN-83 KING       17-NOV-81       -421
FORD       03-DEC-81 KING       17-NOV-81        -16
JAMES      03-DEC-81 KING       17-NOV-81        -16
MILLER     23-JAN-82 KING       17-NOV-81        -67

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  Name,
  3  HireDate,
  4  Boss,
  5  BossHire,
  6  ABS(BossHire – HireDate) Days
  7  FROM
  8   (
  9   SELECT Ename Name, HireDate,
 10   CONNECT_BY_ROOT Ename Boss,
 11   CONNECT_BY_ROOT HireDate BossHire
 12   FROM EMP
 13   START WITH Job = 'PRESIDENT'
 14   CONNECT BY  PRIOR EMPNO =  MGR
 15   )
```

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```
   16*  WHERE SIGN(BossHire - HireDate) = -1
SQL> /


NAME        HIREDATE   BOSS         BOSSHIRE        DAYS
----------  ---------- -----------  ----------  ----------
SCOTT       09-DEC-82 KING          17-NOV-81        387
ADAMS       12-JAN-83 KING          17-NOV-81        421
FORD        03-DEC-81 KING          17-NOV-81         16
JAMES       03-DEC-81 KING          17-NOV-81         16
MILLER      23-JAN-82 KING          17-NOV-81         67


SQL> ED
Wrote file afiedt.buf


    1   SELECT
    2   Name,
    3   HireDate,
    4   Boss,
    5   BossHire,
    6   ABS(BossHire - HireDate) Days,
    7   MONTHS_BETWEEN(BossHire, HireDate) Months
    8   FROM
    9    (
   10    SELECT Ename Name, HireDate,
   11    CONNECT_BY_ROOT Ename Boss,
   12    CONNECT_BY_ROOT HireDate BossHire
   13    FROM EMP
   14    START WITH Job = 'PRESIDENT'
   15    CONNECT BY  PRIOR EMPNO = MGR
   16    )
   17*  WHERE SIGN(BossHire - HireDate) = -1
SQL> /


NAME        HIREDATE  BOSS         BOSSHIRE        DAYS     MONTHS
----------  --------- -----------  ----------  ----------  ----------
SCOTT       09-DEC-82 KING          17-NOV-81        387  -12.741935
ADAMS       12-JAN-83 KING          17-NOV-81        421  -13.83871
FORD        03-DEC-81 KING          17-NOV-81         16  -.5483871
JAMES       03-DEC-81 KING          17-NOV-81         16  -.5483871
MILLER      23-JAN-82 KING          17-NOV-81         67  -2.1935484


SQL> ED
Wrote file afiedt.buf


    1   SELECT
    2   Name,
    3   HireDate,
    4   Boss,
```

```
 5  BossHire,
 6  ABS(BossHire - HireDate) Days,
 7  TRUNC(ABS(MONTHS_BETWEEN(BossHire, HireDate))) Months
 8  FROM
 9   (
10   SELECT Ename Name, HireDate,
11   CONNECT_BY_ROOT Ename Boss,
12   CONNECT_BY_ROOT HireDate BossHire
13   FROM EMP
14   START WITH Job = 'PRESIDENT'
15   CONNECT BY  PRIOR EMPNO =  MGR
16   )
17* WHERE SIGN(BossHire - HireDate) = -1
SQL> /

NAME        HIREDATE  BOSS        BOSSHIRE        DAYS     MONTHS
----------  --------- ----------  ---------  ----------  ----------
SCOTT       09-DEC-82 KING        17-NOV-81        387          12
ADAMS       12-JAN-83 KING        17-NOV-81        421          13
FORD        03-DEC-81 KING        17-NOV-81         16           0
JAMES       03-DEC-81 KING        17-NOV-81         16           0
MILLER      23-JAN-82 KING        17-NOV-81         67           2

SQL> ED
Wrote file afiedt.buf

 1  SELECT
 2  Name,
 3  HireDate,
 4  Boss,
 5  BossHire,
 6  ABS(BossHire - HireDate) Days,
 7  TRUNC(ABS(MONTHS_BETWEEN(BossHire, HireDate))) Months,
 8  TRUNC(ABS(MONTHS_BETWEEN(BossHire, HireDate) / 12)) Years
 9  FROM
10   (
11   SELECT Ename Name, HireDate,
12   CONNECT_BY_ROOT Ename Boss,
13   CONNECT_BY_ROOT HireDate BossHire
14   FROM EMP
15   START WITH Job = 'PRESIDENT'
16   CONNECT BY  PRIOR EMPNO =  MGR
17   )
18* WHERE SIGN(BossHire - HireDate) = -1
SQL> /

NAME        HIREDATE  BOSS        BOSSHIRE        DAYS     MONTHS
YEARS
```

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```
---------- --------- ---------- --------- ---------- ---------- ---------
-
SCOTT       09-DEC-82 KING       17-NOV-81        387         12
1
ADAMS       12-JAN-83 KING       17-NOV-81        421         13
1
FORD        03-DEC-81 KING       17-NOV-81         16          0
0
JAMES       03-DEC-81 KING       17-NOV-81         16          0
0
MILLER      23-JAN-82 KING       17-NOV-81         67          2
0


SQL> ED
Wrote file afiedt.buf

    1   SELECT
    2   Name,
    3   HireDate,
    4   Boss,
    5   BossHire,
    6   ABS(BossHire – HireDate) Days,
    7   TRUNC(ABS(MONTHS_BETWEEN(BossHire, HireDate))) Months,
    8   TRUNC(ABS(MONTHS_BETWEEN(BossHire, HireDate) / 12)) Years
    9   FROM
   10    (
   11   SELECT Ename Name, HireDate,
   12   CONNECT_BY_ROOT Ename Boss,
   13   CONNECT_BY_ROOT HireDate BossHire
   14   FROM EMP
   15   START WITH Job = 'PRESIDENT'
   16   CONNECT BY  PRIOR EMPNO =  MGR
   17    )
   18* WHERE SIGN(BossHire – HireDate) = 1
SQL> /

NAME       HIREDATE  BOSS       BOSSHIRE       DAYS     MONTHS
YEARS
---------- --------- ---------- --------- ---------- ---------- ---------
-
JONES      02-APR-81 KING       17-NOV-81        229          7
0
SMITH      17-DEC-80 KING       17-NOV-81        335         11
0
BLAKE      01-MAY-81 KING       17-NOV-81        200          6
0
ALLEN      20-FEB-81 KING       17-NOV-81        270          8
0
```

```
WARD        22-FEB-81 KING        17-NOV-81          268         8
0
MARTIN      28-SEP-81 KING        17-NOV-81           50         1
0
TURNER      08-SEP-81 KING        17-NOV-81           70         2
0
CLARK       09-JUN-81 KING        17-NOV-81          161         5
0

8 rows selected.

SQL> cl scr

SQL> SELECT ENAME Name, Dname, Loc,
  2  CONNECT_BY_ROOT Ename Boss,
  3  CONNECT_BY_ROOT D.Loc BossLoc
  4  FROM EMP E, Dept D
  5  WHERE E.Deptno = D.Deptno
  6  START WITH Job = 'PRESIDENT'
  7  CONNECT BY  PRIOR EMPNO =  MGR;

NAME        DNAME          LOC           BOSS          BOSSLOC
----------  -------------  ------------  ------------  ------------
KING        ACCOUNTING     NEW YORK      KING          NEW YORK
JONES       RESEARCH       DALLAS        KING          NEW YORK
SCOTT       RESEARCH       DALLAS        KING          NEW YORK
ADAMS       RESEARCH       DALLAS        KING          NEW YORK
FORD        RESEARCH       DALLAS        KING          NEW YORK
SMITH       RESEARCH       DALLAS        KING          NEW YORK
BLAKE       SALES          CHICAGO       KING          NEW YORK
ALLEN       SALES          CHICAGO       KING          NEW YORK
WARD        SALES          CHICAGO       KING          NEW YORK
MARTIN      SALES          CHICAGO       KING          NEW YORK
TURNER      SALES          CHICAGO       KING          NEW YORK
JAMES       SALES          CHICAGO       KING          NEW YORK
CLARK       ACCOUNTING     NEW YORK      KING          NEW YORK
MILLER      ACCOUNTING     NEW YORK      KING          NEW YORK

14 rows selected.

SQL> cl scr

SQL> COLUMN "Path" FORMAT A35
SQL> SELECT Ename,
  2  SYS_CONNECT_BY_PATH(Ename, '/') "Path"
  3  FROM Emp
  4  START WITH Ename = 'KING'
  5  CONNECT BY PRIOR Empno = MGR;
```

```
ENAME       Path
----------  -----------------------------------
KING        /KING
JONES       /KING/JONES
SCOTT       /KING/JONES/SCOTT
ADAMS       /KING/JONES/SCOTT/ADAMS
FORD        /KING/JONES/FORD
SMITH       /KING/JONES/FORD/SMITH
BLAKE       /KING/BLAKE
ALLEN       /KING/BLAKE/ALLEN
WARD        /KING/BLAKE/WARD
MARTIN      /KING/BLAKE/MARTIN
TURNER      /KING/BLAKE/TURNER
JAMES       /KING/BLAKE/JAMES
CLARK       /KING/CLARK
MILLER      /KING/CLARK/MILLER

14 rows selected.

SQL> SELECT Ename,
  2  SYS_CONNECT_BY_PATH(Job, '/') "Path"
  3  FROM Emp
  4  START WITH Ename = 'KING'
  5  CONNECT BY PRIOR Empno = MGR;

ENAME       Path
----------  -----------------------------------
KING        /PRESIDENT
JONES       /PRESIDENT/MANAGER
SCOTT       /PRESIDENT/MANAGER/ANALYST
ADAMS       /PRESIDENT/MANAGER/ANALYST/CLERK
FORD        /PRESIDENT/MANAGER/ANALYST
SMITH       /PRESIDENT/MANAGER/ANALYST/CLERK
BLAKE       /PRESIDENT/MANAGER
ALLEN       /PRESIDENT/MANAGER/SALESMAN
WARD        /PRESIDENT/MANAGER/SALESMAN
MARTIN      /PRESIDENT/MANAGER/SALESMAN
TURNER      /PRESIDENT/MANAGER/SALESMAN
JAMES       /PRESIDENT/MANAGER/CLERK
CLARK       /PRESIDENT/MANAGER
MILLER      /PRESIDENT/MANAGER/CLERK

14 rows selected.

SQL> COLUMN "JobPath" FORMAT A35
SQL> COLUMN "SalPath" FORMAT A35
SQL> SELECT Ename,
```

```
  2  SYS_CONNECT_BY_PATH(Job, '/') "JobPath",
  3  SYS_CONNECT_BY_PATH(Sal, '/') "SalPath"
  4  FROM Emp
  5  START WITH Ename = 'KING'
  6  CONNECT BY PRIOR Empno = MGR;


ENAME      JobPath                              SalPath
---------- ------------------------------------ ----------------------
---------
KING       /PRESIDENT                           /5000
JONES      /PRESIDENT/MANAGER                   /5000/2975
SCOTT      /PRESIDENT/MANAGER/ANALYST           /5000/2975/3000
ADAMS      /PRESIDENT/MANAGER/ANALYST/CLERK     /5000/2975/3000/1100
FORD       /PRESIDENT/MANAGER/ANALYST           /5000/2975/3000
SMITH      /PRESIDENT/MANAGER/ANALYST/CLERK     /5000/2975/3000/800
BLAKE      /PRESIDENT/MANAGER                   /5000/2850
ALLEN      /PRESIDENT/MANAGER/SALESMAN          /5000/2850/1600
WARD       /PRESIDENT/MANAGER/SALESMAN          /5000/2850/1250
MARTIN     /PRESIDENT/MANAGER/SALESMAN          /5000/2850/1250
TURNER     /PRESIDENT/MANAGER/SALESMAN          /5000/2850/1500
JAMES      /PRESIDENT/MANAGER/CLERK             /5000/2850/950
CLARK      /PRESIDENT/MANAGER                   /5000/2450
MILLER     /PRESIDENT/MANAGER/CLERK             /5000/2450/1300

14 rows selected.

SQL> SPOOL OFF
```